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A REVIEW OF THE GENUS *CHRYSOLINA* MOT- SCHULSKY IN NORTH AMERICA (COLE- OPTERA-CHRYSOMELIDAE).

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The generic name *Chrysolina* Mots. is here used in place of *Chrysomela*, for according to Maulik¹ the latter name is no longer valid for the group of insects that it has been used to include, seeing that Latreille designated *C. populi* L. as the genotype of *Chrysomela*. As a result *Melasoma* Stephens becomes a synonym of *Chrysomela*, and *Chrysolina* Mots., the first available name, has to be resurrected for the more typical members of the old Linnaean genus.

In this country there are but a few species as compared with the large number in the Old World. They have been specially studied a number of times, notably by Rogers,² Crotch,³ and Linell,⁴ but the descriptions and discussions concerning them are so brief in many cases that they are unsatisfactory. Much new material and new information has also been secured in recent years. This it seems justifies a restudy and review of the species.

For this work I have had access to the large collection of the California Academy of Sciences which includes the extensive collections of Blaisdell, Fenyès, and myself besides numerous smaller ones; the rich C. W. Leng collection of Chrysomelidae now in the hands of A. R. Mead; besides material furnished on loan or as a gift by

¹ Anns. and Mag. Nat. Hist., (19), XV, Jan. 1925, pp. 95-96.

² Synopsis of Chrysomelidae of the U. S., by W. F. Rogers, Proc. Ac. Nat. Sci. Phil., 1856, pp. 29-39, pl.

³ Material for the Study of the Phytophaga of the United States, by G. R. Crotch, Proc. Ac. Nat. Sci. Phil., XXV, 1873, pp. 50-51.

⁴ A Short Review of the Chrysomelas of North America, by Martin Linell, Journ. N. Y. Ent. Soc., IV, Dec. 1896, p. 200.

Owen Bryant, Kenneth Maehler, and Hugh Leech. Dr. H. C. Fall has also very kindly examined for me, the Rogers types which are now in the Museum of Comparative Zoology at Cambridge, Mass. To the owners and custodians of these collections as well as to Dr. Fall, I, therefore, wish to acknowledge my indebtedness, for without their aid this study could not have been made.

KEY TO SPECIES.

1. Lateral groove of pronotum well defined and complete from base to apex 6
 Lateral groove of pronotum poorly defined, generally more or less obliterated anteriorly 2
2. Elytral striae generally well impressed and strial punctures more or less regularly arranged 3
 Elytral striae not impressed except occasionally in females of *hudsonica* and strial punctures often somewhat irregular posteriorly 4
3. Wingless, very convex, black with dorsal surface a unicolorous metallic green or blue-green color, elytral striae generally deeply impressed or sulcate with the strial punctures regularly arranged though often vague and the intervals convex or carinate and finely rugose *subsulcata*
 Fully winged, moderately convex, black, upper surface aeneous or with elytra a deep violet, legs and sides of prothorax to a great extent a reddish orange, the elytral striae feebly impressed and more or less regularly and distinctly punctured, the inner intervals somewhat convex and generally impunctate, the outer broader, flatter and as a rule irregularly punctured **blaisdelli**
4. Elytra black or aeneous with margin or at least epipleura flavous 5
 Entire insect above bluish black or aeneous, the elytra sometimes violaceous, rarely with epipleura faintly flavous. **vidua**
5. Flavous elytral margins rather broad, almost reaching eighth striae, the rest of upper surface black or with a very faint bluish or bronze tinge *flavomarginata*
 Flavous marginal area confined to epipleura or at most extending but slightly beyond marginal bead, the rest of upper surface distinctly metallic, aeneous or greenish; species generally much smaller and narrower *hudsonica*
6. Elytra with strial punctures generally rather regularly arranged; the insect as a whole elongate oval or elliptical and

with smooth and shining surface; color a deep blue or violet with the elytra variable, cupreous (typical phase), bright green, bronze black, or deep blue or violet.

auripennis

Elytra with stria punctures much confused and not readily separated from the numerous scattered interstitial punctures; the insect less elongate, often globose and inclined to be dull in appearance 7

7. Rather small, oval, apterous, sides of prothorax conspicuously arcuate, unicolorous blue or green *basilaris*

Somewhat large, globosely oval, winged, sides of prothorax moderately arcuate and more convergent forwards, aeneous black, subopaque *subopaca*

Chrysolina subsulcata (Mannerheim).

Chrysomela subsulcata (Motschulsky) Mannerheim, Dritter Nachtrag der Aleutischen Ins., Bull. Mosc., XXVI, 1853, p. 254.

Of moderate size, very convex, body an aeneous black, upper surface varying from dull green to a bluish green, antennae with underside of two or three basal segments flavous. Head smooth and shining, finely, sparsely punctured, front flattened or feebly convex; antennae robust, gradually broader outwards from fourth segment, the intermediate segments about as broad as long, and reaching about one segment behind margin of prothorax. Prothorax broad, hind margin broadly arcuate at middle, front margin transverse or feebly arcuate medially as seen from above, and finely margined, lateral grooves deep and complete, the sides thickened and convex and projecting well forward in front, the disk smooth and shining, finely, sparsely punctured, more coarsely basally and near lateral grooves. Elytra about 1 mm. longer than broad, very convex, varying from deeply sulcate with carinate intervals to a condition where the surface is somewhat even, with the striae but little impressed or very fine. Under-surface generally finely, sparsely punctured. Length 7-8 mm., breadth 5.25-6.25 mm.

Type collected on St. Paul Island, Pribilof Group, Behring Sea, by Wosnesensky, and now most likely in the Leningrad Museum.

This species is a very variable one as are most boreal, wingless species. In the series of ninety-one specimens belonging to the California Academy of Sciences, collected on St. Paul and St. George of the Pribilof Group of islands, the type locality, are specimens having the elytra deeply sulcate with the intervals sharply

carinate as well as others which show all stages of intergradation to those which have an even surface with fine striae but feebly impressed. The more typical sulcate or subsulcate specimens are generally dull in appearance as the result of the intervals being finely rugose while those of the opposite extreme are smooth and shining. The color varies from bottle green, to bright green, blue green, green with coppery reflections or rarely to a deep blue.

Until a few years ago, the only specimens known were from the type locality. On July 13, 1899, Prof. Trevor Kincaid while on the Harriman Expedition obtained one specimen on Popof Island of the Shumagin Group, south of the Alaska Peninsula. In 1914, F. Johnson, for the Canadian Arctic Expedition, also collected a number of specimens near Kanganevik and other places about Camden Bay and on the tundra east of Collinson Point, British North West Territory, while on July 31, 1916, J. August Kusche collected a single specimen, now in my possession, at St. Michael, Alaska. Owen Bryant did not find the species in the Mackenzie Delta region. The species lives on the dwarf or creeping willow. Prof. Kincaid described and figured the various earlier stages in the Harriman reports. This species is not closely related to any other North American species but it is very close to a number which are to be found along the north coast of Siberia, as far east as East Cape, all of which are to be placed in the Group *Pleurostica* of Motschulsky.

***Chrysolina blaisdelli* Van Dyke, new species**

Rather small, moderately convex, oval, body black, upper surface a greenish bronze in type and bronze with deep blue elytra in paratypes, and with sides of elytra in great part, antennal segments 1-4, legs except knees, and sides of last ventral segment a reddish orange. Head rather coarsely, not closely punctured, the median and fronto-clypeal sutures sharply defined and a well marked triangular impression in front; antennae about reaching hind margin of prothorax, with segments 1-6 somewhat longer than broad, 7-11 transverse and gradually broader. Prothorax more than twice as wide as long, median portion of base slightly arcuate, apex feebly emarginate, lateral grooves shallow but complete and sparsely, coarsely punctured; disk sparsely, finely punctured, more evidently so towards base and apex, in one specimen rather coarsely and more generally punctured, the sides but little thickened and with a median black spot somewhat interrupting the orange marginal border. Elytra .5 mm. longer than broad,

moderately convex, minutely alutaceous, the four inner discal striae finely but definitely impressed and with the distinct stria punctures somewhat regularly arranged, the lateral striae vague and the punctures more or less indistinguishable from the scattered interstria punctures, the even intervals 2, 4 and 6 much narrower than the odd in the type and the odd intervals 3, 5 and 7 impunctate and a bit convex, in the paratypes the intervals 4, 6 and 8 are fully as broad as the odd intervals or even broader and irregularly punctured. Beneath minutely, sparsely punctured except propleura and apex of last ventral segment which are more coarsely punctured. Holotype, length 5.5 mm., breadth 3.5 mm., allotype and paratypes, length 6.5 mm., breadth 4.25 mm.

The apex of the last ventral segment in the male is broadly truncate and in the female arcuate as usual. In the smaller holotype, the apices of the elytra are normal but in the other specimens they are a bit produced.

Holotype male and allotype female (Nos. 4561 and 4562, Mus. C. A. S. Ent.), collected at Nome, Alaska, in July 1910, by Dr. F. E. Blaisdell. Paratype males, one somewhat injured, collected at Aklavik, North West Terr., Canada, one on June 16, 1931 (Lot 233), the other June 20, 1931 (Lot 237) by Owen Bryant. One of the latter was found walking on the tundra at an altitude of 2000 ft.

This rather small species might be confused with *hudsonica* but the orange colored legs and lateral margin of prothorax as well as the peculiar type of sculpturing should enable it to be definitely separated.

Chrysolina vidua Rogers

Chrysomela vidua Rogers, Syn. of Chrysomelidae, Proc. Ac. N. S. Phil., 1856, p. 36.

Chrysomela subseriata Lec., Notes on Col. fr. Fort Simpson, Proc. Ac. N. S. Phil., 1860, p. 321.

Of moderate size, elongate oval, moderately convex, black, upper surface aeneous, blue black or more commonly dark blue, the elytra often slightly contrasting in color to the head and pronotum. Head with front sparsely, finely punctured, clypeus more coarsely so, fronto-clypeal suture sharply defined, the frontal suture obscurely indicated but front feebly impressed at middle along sutural line; antennae rather long, reaching four segments beyond base of prothorax, segments

7-8 about as long as broad, the remainder distinctly longer than broad. Prothorax more than a third wider than long, base broadly arcuate at middle, apex feebly emarginate as seen from above, lateral grooves shallow behind, obscure in front but more or less outlined by the coarse punctuation throughout its course, disk rather finely, not densely punctured. Elytra about 1 mm. longer than broad, moderately convex, minutely alutaceous yet shining, striae not impressed but series of striae punctures of moderate size, separated by from one to three times their own breadth, and rather regularly arranged basally, obscure apically, intervals flat with from 1-3 irregular series of fine punctures and generally feebly rugose. Beneath finely and sparsely punctured. Length 6-8 mm. (average 7 mm.), breadth 4.5 mm. (average 4.25 mm.).

As noted by Schaeffer⁵, this species was supposed to be the same as *basilaris* (Say), by Crotch, 1873, Linell, 1896, and most subsequent workers. It is generally labeled *basilaris* (Say) in most collections. The true *basilaris* as noted by Schaeffer is something entirely different as will be seen later. *Chrysolina vidua* (Rogers) in physical characters rather closely resembles *flavomarginata* (Say) and according to Schaeffer and others is but a subspecies of that. I cannot agree with this opinion. I consider the line of cleavage between the two too great to allow of their being so closely associated. Most specimens of *vidua* are inclined to be somewhat larger than *flavomarginata*, to be rather more convex, have the lateral prothoracic sulci better defined though always shallow and with a tendency to completeness which is not the case in the other, have the upper surface a more or less uniform bluish-black or blue color in contrast to the faint bronze color of the latter and lack the broad yellow margin to the elytra. The elytral intervals are also generally feebly rugose as well as very distinctly punctured and dull in contrast to the much smoother, more shining and very finely punctured surface in the other. In a few specimens the epipleura are faintly flavous. The deep blue or violet colored specimens can always be separated from the subspecies *cyanea* of *auripennis* by the latter always having the lateral grooves of the prothorax deep and complete as well as being generally larger. The blue phase of *basilaris*, the *montivagans* of LeConte, has the prothorax broadly rounded at the sides and much narrowed posteriorly and the elytra much narrowed basally as a result of being wingless as well as more irregularly punctured.

⁵ Short studies in the Chrysomelidae (Coleoptera), part 2, by Chs. Schaeffer, Journ. N. Y. Ent. Soc., vol. XLI, p. 479.

In general *vidua* ranges more to the northwest than does any of our other species. Rogers' type specimen came from "Oregon, Col. McCall," and the type of *subseriata* LeConte from "Oregon or Rocky Mountains," probably the former locality. I have seen a specimen from Montana, but none from east of the Rocky Mountains south of this state. Most specimens known to me have been collected in eastern Washington: Pullman, Wawari and so forth; northeastern Oregon: Baker; northern Idaho; and southeastern British Columbia: Vernon. This distribution would seem to substantiate Schaeffer in his opinion that this species is not the *basilaris* of Say for Say received nothing from west of the Rocky Mountains.

Chrysolina flavomarginata (Say)

Chrysomela flavomarginata Say, Descr. Col. Coll. in Exped. to Rocky Mts. under Maj. Long, Journ. Ac. N. S. Phil III (1824), p. 452.

Similar to preceding in size and general appearance but somewhat less convex, smoother and more shining, of a black color with faint aeneous or bluish gloss and with the epipleura and sides of the elytra flavous to about the eighth striae. Head minutely, sparsely punctured, clypeus more coarsely so, fronto-clypeal and median suture in front well defined, the frontal impression vague or lacking; antennae extending four segments beyond hind margin of prothorax, all segments apparently longer than broad though outer segments quite robust. Prothorax more than a third wider than long, base arcuate at middle, apex feebly emarginate, lateral grooves shallow, in most cases obliterated in front, but with series of coarse punctures scattered along them, the disk very finely and rather distantly punctured except denser near base in some cases. Elytra about 1 mm. longer than broad, minutely alutaceous, the striae not impressed but striaal punctures more or less regularly arranged except towards apex where to a great extent obliterated, the intervals flat and rather finely, sparsely and irregularly punctured, the general surface smooth and shining though at times feebly and minutely rugose. Beneath finely, sparsely punctured. Length 6-7.5 mm., breadth 4-4.5 mm.

As indicated in the previous description, this species is closely related to it, differing chiefly by having a flavous marginal band to the elytra and by being generally of a blacker color with but a faint bronze or bluish lustre. This species is even more closely related to the European *marginata* L.

According to Say, his type specimen was collected by Thomas

Nuttall in Missouri. This means of course the old Missouri Territory and judging from reports of Nuttall's travels, the locality would be somewhere in the region of the Dakotas. Specimens that I have seen have been collected in Colorado: Denver, Fort Collins, Glenwood Springs, San Louis, and so forth; western Kansas and Nebraska: Sioux Co.; South Dakota: Volga (Truman); Alberta: Calgary (O. Bryant); Utah: Vineyard (T. Spaulding); Montana; and Ohio (Leng Coll.). The Louisiana locality given in the Leng Catalogue, I question for the species is in the main confined to the Rocky Mountain region. Recently a series of eighteen specimens was collected near Flagstaff, Arizona, by Kenneth Maehler and another series from Big Bear Lake, San Bernardino Co., Calif., collected July 11, 1937, by Darwin L. Tiemann and submitted by Earl Herald, also a single specimen from near Seven Oaks in the San Bernardino Mts. of California by W. C. Reeves. These latter are interesting not alone in giving more western localities but in putting on record another example of that transverse distribution of Rocky Mountain species which has been noted with regard to a number of insects such as *Calosoma tristis* and to a certain degree the genus *Amblychila*. According to Wickham, the species feeds on *Artemisia dracunculus* L.

Chrysolina hudsonica Brown

Chrysolina hudsonica Brown, Canad. Entom. LXX, 1938,
p. 35.

Rather small, elongate oval, smooth and shining, black with a decided aeneous lustre and the underside of the first two antennal segments and epipleura fulvous, the yellow portion of the latter sometimes extending up the sides of the elytra to the extent of an interval. Head alutaceous with a few minute punctures on front and some coarser ones on clypeus, the fronto-clypeal suture distinct but the median suture sometimes feebly defined in front and as often obliterated; antennae extending two segments beyond hind margin of prothorax, the segments all longer than broad and the outer more robust. Prothorax almost twice as broad as long, base broadly arcuate at middle and apex almost transverse as seen from above, lateral grooves shallow, in most cases obliterated in front, disk alutaceous like head and elytra, finely, sparsely punctured, denser behind and with coarser punctures along lateral grooves. Elytra almost 1 mm. longer than broad, the striae not impressed except in two somewhat larger females from Nome where they are distinctly so, the strial punctures distinct and

somewhat regularly arranged, at least in front and in the more northern specimens such as those from Nome and Aklavik, and very fine and somewhat obliterated in the Churchill specimens, the intervals flat and sparsely, finely, irregularly punctured, except in the Nome females where they are feebly convex. Beneath very finely, sparsely punctured. Length 3.5-4.5 mm., breadth 3.5-4.5 mm., the smaller dimensions pertaining to the Churchill specimens, the larger to the Nome females.

I have examined the following specimens, two males and two females, collected at Nome, Alaska, July 1900, by Dr. F. E. Blaisdell, and a series of four specimens collected at Aklavik, Canadian North West Territory, June 20, 1930, by Owen Bryant. The Nome specimens are bronze and the Aklavik or Mackenzie Delta specimens somewhat greenish or bluish and in general a bit smaller. Besides these there is a series of eight specimens collected at Churchill, Manitoba, on Hudson Bay, June 10, 1930, by Owen Bryant which are still smaller and smoother. This last is the phase which has been described by Brown who had a very large series, also collected at Churchill.

This species is definitely related to *flavomarginata* (Say) but it seems to me is quite distinct. The more northern specimens of *flavomarginata* such as those from the Dakotas, Montana and Calgary, Alberta, are as true to type as are those from Colorado and very readily separated from all varieties of the arctic species which is in general smaller, more bronzed, with a narrower flavous margin to the elytra, with the basal segments of antennae somewhat flavous, lacking in *flavomarginata*, with a more evident alutaceous sculpturing to the upper surface, and in general a more elongate and narrower body, especially as regards the Aklavik and Churchill specimens. It might possibly be regarded as a subspecies of *flavomarginata*. The specimens in hand, however, show a most definite line of demarkation between the two, so until true intermediates are found, I believe that they should be kept as distinct species. Their food habits are also different, I believe. *Flavomarginata* feeds on a species of *Artemisia* whereas *hudsonica*, according to Blaisdell and Bryant, feeds on willow.

Chrysolina auripennis (Say)

Chrysomela auripennis Say, Descr. Col. Coll. in Exp. to Rocky Mts. under Maj. Long, Journ. Ac. N. S. Phil. III (1824), p. 452.

Chrysomela cribraria Rogers, Syn. of Chrysomelidae of U. S., Proc. Ac. N. S. Phil., 1856, p. 36.

Chrysomela inornata Rogers, loc. cit., 1856, p. 36.

Chrysomela auripennis cyanea Schffr., Journ. N. Y. Ent. Soc. XLI, 1933, pp. 479, 480.

Rather large, elongate oval, moderately convex, head, prothorax, scutellum and underside of body with appendages always a deep blue or violet, the elytra on the other hand varying from cupreous to bright green, to bronze black and to a deep blue or violet, unicolorous with rest of body. Head obscurely punctured except at sides and anteriorly, clypeus distinctly punctured, fronto-clypeal suture distinct at least at sides, the front impressed along frontal sutural line but suture indistinct; antennae extending at least two to three segments beyond hind margin of prothorax, all segments except second distinctly longer than broad, the outer somewhat broader. Prothorax almost twice as wide as long, base broadly arcuate at middle, apex transverse at middle or feebly arcuate as seen from above, lateral grooves deep and complete and with series of coarse punctures at bottom of groove, the outer margin quite convex, the disk minutely alutaceous and finely, sparsely punctured. Elytra slightly longer than broad, indistinctly yet minutely alutaceous, striae not impressed, punctuation variable, the strial punctures in most specimens rather coarse and somewhat regularly arranged, the interstrial punctures, however, varying from rather fine and scattered in the more eastern specimens to a condition where they are fully as coarse as are the strial punctures, giving the surface the appearance of being coarsely and irregularly punctured, a condition commonly found in the specimens from the more western parts of Texas and from New Mexico and Arizona. Beneath sparsely, coarsely punctured along metapleura, elsewhere finely and sparsely punctured. Length 8-10.5 mm., breadth 5-6 mm.

Say's description was based on a specimen found in "Arkansas . . . near the Rocky Mountains." The portion of the old Arkansas Territory near the Rocky Mountains is now about eastern Colorado. Most of the specimens with moderately cupreous elytra which would answer to the original description, are from Illinois, Indiana, Iowa, Kansas, Nebraska, eastern Colorado, and eastern Texas. Rogers' *cribraria* which was "bronze black" was from the "Southern States." I have two specimens before me from Fort Sam Houston, Tex., collected by Chapman Grant, which agree perfectly with the description. These cannot be separated from typical *auripennis* except as to color. Most Texas specimens that I have seen and I have had a large study series collected at Falfurrias by

J. O. Martin and E. G. Linsley, have the elytra a brilliant green though there are a few showing the cupreous gloss which indicates that they are but color phases. These Texas specimens of both colors also show the grosser interstrial punctures which is such a characteristic feature of the more western specimens. In a single specimen from Grant Co., N. Mex., collected by R. T. Kellogg, the elytra are blue-green, yet the insect is truly bicolored for the fore-body is deep violet, contrasting strongly with the elytra. Another single specimen, from the White Mts. of Ariz., collected by F. H. Parker and now in the collection of Owen Bryant, has the elytra more brilliantly cupreous than any other specimen that I have seen. This specimen also has the elytra more coarsely and densely punctured than any of the other specimens. The entirely violaceous specimens mentioned by Rogers as from New Mexico are no doubt the same as those found commonly in southern Arizona and southern Utah and generally but wrongly labeled as *inornata* in collections.

The true *inornata* of which I have seen a specimen is very close to *cribraria*, only differing by having the legs and body beneath blue whereas they are unicolorous bronze black in the other. Dr. H. C. Fall, who has very carefully examined the Rogers' types which are at Harvard, for me, also believes that *cribraria* and *inornata* are but color varieties of *auripennis*. The deep blue or violet unicolorous phase which seems to be restricted to Arizona, southern Utah and perhaps western New Mexico, has been described as the variety *cyanea* by Schaeffer. I would place this as a subspecies of *auripennis*, for it is distinctly separated geographically, averages larger in size, has the prothorax proportionally broader, with the sides more parallel basally and less convergent anteriorly, the outer segments of the antennae more inclined to be cylindrical, less triangular, is of a duller aspect and uniformly of a unicolorous deep blue or violet color. The Utah specimens have the elytral punctures much finer than they are in the Arizona specimens. I have seen no intermediates between this subspecies and the true *auripennis* whereas all of the various bicolored phases or varieties grade one into another, besides appear to be almost entirely restricted to the territory east of the continental divide. Of this subspecies I have seen numerous specimens from St. George, Utah, and from Tucson, Pepper Lance, the Catalina and Chiricahua Mts. of Arizona, as well as a series of sixty-nine specimens in the collection of Owen Bryant, collected in the Santa Rita Mts. of Arizona, Oct. 15, 1936.

Chrysolina basilaris (Say)

Chrysomela basilaris Say, Descr. Col. Coll. in Exped. to Rocky Mts. under Maj. Long, Jour. Ac. N. S. Phila. III (1824), pp. 451-452.

Chrysomela montivagans Lec., Col. Alpine Regions of the Rocky Mts., II, Bull. U. S. Geol. and Geogr. Survey IV, 1878, p. 463.

Of moderate size, oval, convex, with imperfectly developed wings, dull sericeous above as the result of the pronounced alutaceous surface, color varying from blue-black to green. Head rather sparsely, finely punctured above, more coarsely and densely punctured on clypeus, frontoclypeal suture distinct and deeply impressed, frontal impression also generally distinct in front as well as markedly impressed; antennae somewhat robust, extending at least three segments beyond hind margin of prothorax, segments 1-6 longer than broad (second barely so), the following more robust, 7-10 transverse and very little narrower than broad. Prothorax one third broader than long, base arcuate at middle, apex also very feebly arcuate when seen from above, lateral grooves well impressed and complete though not sharply defined as in *cupripennis* and coarsely, irregularly punctured, the sides convex and prominent though not as much elevated as in *cupripennis*, the margin broadly arcuate, disk rather finely, somewhat densely punctured. Elytra one sixth longer than broad, striae not defined, the punctuation moderately coarse, somewhat dense, and very irregular, only occasionally can the regularity of the striae punctures on the disk be observed. Beneath finely, sparsely punctured. Length 6-8 mm., breadth 4-5 mm.

This species is quite distinct, its compact form, imperfect wings, well rounded sides of prothorax, robust antennae, rather densely, irregularly punctured elytra and uniform coloration enabling it to be readily separated from any of the other North American species.

Chrysolina basilaris (Say), as indicated by Schaeffer, has long been misunderstood. Say's original specimen came from the old Arkansas Territory, "Inhabits Arkansas . . . I obtained this specimen from near the Rocky Mountains," which no doubt would mean eastern Colorado as we know it today. Say's description was very poor in that he did not mention many of the most distinctive features, but he did call the "Body green," "antennae black, basal joint rufous," "lateral margin (of thorax) much thickened," and

state that the elytra had "irregularly scattered punctures." There is only one all green species of the genus in this country, and that species has also all of the diagnostic characters mentioned by Say. This species is to be found in the high Rocky Mountains of Wyoming and Colorado, and it is also but a green phase of what was later on described as *montivagans* by LeConte from the blue phase. I have collected fifteen specimens of the green or typical *basilaris* from above timber line on Long's Peak, Col., July 9, 1926, and two more from above Monarch Pass, Col., in July, 1934, and have had five more recently submitted to me for study which were collected from beneath stones as were mine, on Mt. Washburn, Yellowstone National Park, at 10,317 ft. alt., by Kenneth Maehler. Of the blue phase the variety *montivagans* Lec., LeConte's type specimen was from Mt. Lincoln, Colorado (10,000-13,000 ft. alt.). Wickham in his List of Colorado Coleoptera, lists the following localities: Pikes Peak, Argentine Pass, Leavenworth Valley, all with Mt. Lincoln being Bowditch citations. In addition Wickham gives Custer Co. (Cockerell). In the Leng collection are two specimens merely marked "Col., 7, 89," probably all collected by Bowditch while in the Fenyès' collection are four specimens, all tagged "Middle P. Col., Dury." I have collected three typical blue-black specimens, two from above timber line, about 11,000 ft. alt., on Long's Peak, Col., more or less closely associated with the green phase which I collected at the same time, and one from the Twin Sisters, a peak directly opposite Long's Peak, during July, 1926.

Chrysolina subopaca (Rogers)

Chrysomela subopaca Rogers, Synopsis of Chrysomelidae of United States, Proc. Ac. N. S. Ac. Phil., 1856, p. 36.

Chrysomela opacipennis Cr., err. typ., Material for the Study of Phytophaga, Proc. Ac. N. S. Phil., XXV, 1875, pp. 50-51.

Moderately large, broadly oval, robust, very convex, unicolorous bronze or feebly violaceous above or bronzed with head, antennae and margins of prothorax slightly violaceous, the undersurface and legs also generally violaceous and tarsi a bit bluish, the upper surface also minutely alutaceous and dull. Head finely, sparsely punctured, more closely in front especially on clypeus, fronto-clypeal and frontal sutures distinct and well impressed; antennae with last segment alone projecting beyond hind margin of prothorax, all segments longer than broad, the outer somewhat more robust and at

least twice as long as broad. Prothorax about twice as broad as long, base broadly arcuate at middle, apex transverse at middle as seen from above, lateral grooves deep and complete and coarsely, irregularly punctured, the sides wide and convex, disk finely, sparsely punctured. Elytra about .5 mm. longer than wide. Striae not impressed, strial punctures rather coarse, at times regularly arranged on disk, at other times irregular and mixed with the more numerous interstrial punctures which are very variable as to size, sometimes minute, in which cases the strial punctures are apt to be regular in arrangement and thus stand out while in the larger and more robust specimens the interstrial punctures are numerous, to a great extent as coarse as the strial and both irregularly disposed. Beneath finely, sparsely punctured. Length 6.5-10 mm., breadth 5-7 mm.

This species stands out because of its robustness, its marked elytral convexity, its great breadth, its dull more or less unicolorous bronze color, its generally rather dense and irregular punctuation and its short antennae. It is the only species which is to be found on the Atlantic Seaboard and Southeast and seems with the exception of being found in Texas, to be restricted to the country east of the Mississippi River. Rogers gives the "Middle States" as the type locality. Leng in his catalogue gives "N. Y., Fla., Tex., Ind." Blatchley records it from southern Indiana and Florida, in the latter state listing it as taken in the adult state on cacti and thistles and citing Watson for a record on rape. Other records known are Lawrence Co., Ark. (Marshall Coll.) in Calif. Acad. of Sci. Coll., N. C. and Peekskill, N. Y., in the Leng collection. This last record is important in that Leonard in his "List of Insects of New York, 1928," states that "This is reported by Rogers as occurring in N. Y., but apparently this report is doubtful, as no specimens seem to have been taken by anyone else." Peekskill was the home and boyhood collecting ground of John D. Sherman, Jr., no doubt the collector of the specimen.

Boreaphilus americanus Notman.—A single specimen of this peculiar looking Staphylinid was taken by sifting leaves, debris and dead hummock grass at the edge of a small swamp near the outlet of Lake Cochituate, Natick, Mass., on October 31, 1937. It was identified through the kindness of Mr. H. C. Fall to whom I have given the specimen.—C. A. FROST, Framingham, Mass.